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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/913,430	08/14/2001	Mayumi Uno	10873.767USW	9809

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EXAMINER
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ORTIZ CRIADO, JORGE L

ART UNIT	PAPER NUMBER
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2655

DATE MAILED: 12/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/913,430

Applicant(s)

UNO ET AL.

Examiner

Jorge L Ortiz-Criado

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08/14/2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to because n Fig. 6 and 7 descriptive labels should be provided. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the

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reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Yasuda et al. U.S. Patent No. 6,511,788.

Regarding claim 1, Yasuda et al. discloses an optical information recording medium, comprising one or more information layers including recording layers, respectively, each recording layer containing a material that can exhibit transition between two optically different states in response to irradiation with a laser beam as a main component (See col. 3, lines 36-64),

wherein, in at least one of the recording layers, one of the two states of said material is an amorphous state (See col. 4, lines 14-29; col. 14, line 54 to col. 15, line 10),

wherein the information layer including the recording layer that contains said material as a main component thereof has a light transmittance of not less than 30 % when irradiated with a laser beam having a wavelength ranging from 300 nm to 450 nm (See col. 4, lines 14-29, col. 18, lines 46-65)

wherein said material has an energy gap ranging from 0.9 eV to 2.0 eV in the amorphous state (The characteristics of the material as outlined above, make to Yasuda et al. this limitation inherent)

Regarding claim 2, Yasuda et al. discloses wherein, in at least two of the information layers, the recording layers exhibit transition between two optically different states in response to

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irradiation with a laser beam that is incident on said material of the recording layers from a same direction (See col. 4, lines 14-29; col. 14, line 54 to col. 15, line 10; col. 19, lines 36-56)

Regarding claim 3, Yasuda et al. discloses wherein in at least one of the information layer closest to an incident side of the laser beam, said information layer has a light transmittance of not less than 30 % when irradiated with a laser beam having a wavelength ranging from 300 nm to 450 nm (See col. 4, lines 14-29, col. 18, lines 46-65; Ex. Fig. 11)

said material as the main component of the recording layer of said information layer has an energy gap ranging from 0.9 eV to 2.0eV in the amorphous state (The characteristics of the material as outlined above, make to Yasuda et al. this limitation inherent)

Regarding claim 4, Yasuda et al. discloses wherein said recording layer has a thickness ranging from 1 nm to 25 nm (See Fig. 11)

Regarding claim 5, Yasuda et al. discloses wherein at least one of the recording layers contains a material that can exhibit a reversible transition between a crystalline state and an amorphous state as a main component (See col. 18, lines 46-65; col. 19, lines 36-56; Ex. Fig. 11)

Regarding claim 6, Yasuda et al. discloses wherein the recording layer containing the material that can exhibit a reversible transition between the crystalline state and the amorphous state as a main component has a thickness ranging from 1 nm to 15 nm (See Fig. 11)

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Regarding claim 7, Yasuda et al. discloses wherein, as to the recording layer containing the material that can exhibit a reversible transition between the crystalline state and the amorphous state as a main component, a reflectance  $R_c$  of said recording layer with respect to the laser beam when said recording layer is in the crystalline state is higher than a reflectance  $R_a$  thereof with respect to the laser beam when said recording layer is in the amorphous state (See col. 22, lines 19 to col. 23, line 29; Tables 3-8;  $R_c$  and  $R_a$  in H-L)

Regarding claim 8, Yasuda et al. discloses wherein, as to the recording layer containing the material that can exhibit a reversible transition between the crystalline state and the amorphous state as a main component, a light absorptance  $A_c$  of said recording layer with respect to the laser beam when the recording layer is in the crystalline state is greater than 80 % of alight absorptance  $A_a$  thereof when said recording layer is in the amorphous state (See col. 18, lines 46-65; col. 19, lines 36-56; Ex. Fig. 11 col. 22, lines 19 to col. 23, line 29; Tables 3-8)

Regarding claim 9, Yasuda et al. discloses wherein the recording layer containing the material that can exhibit a reversible transition between the crystalline state and the amorphous state as a main component satisfies a relationship expressed as:

$n_a > 2.5$ ;  $n_c > 2.5$ ; and  $k_a < 2.0$  where  $n_c$  represents a refractive index of said material in the crystalline state,  $n_a$  represents a refractive index of said material in the amorphous state, and  $k_a$  represents an extinction coefficient of said material in the amorphous state (See col. 14, line 49 to col. 15, line 11; Fig. 2)

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Regarding claim 10, Yasuda et al. discloses wherein the recording layer containing the material that can exhibit a reversible transition between the crystalline state and the amorphous state as a main component satisfies a relationship expressed as:  $|k_c - k_a| \geq 0.5$  where  $k_c$  represents an extinction coefficient of said material in the crystalline state (See col. 14, line 49 to col. 15, line 11; Fig. 2)

Regarding claim 11, wherein the  $n_a$  and  $n_c$  satisfy a relationship expressed as:  $n_a - n_c \leq 1.0$  (See col. 14, line 49 to col. 15, line 11; Fig. 2)

Regarding claim 12, Yasuda et al. discloses wherein the recording layer containing the material that can exhibit a reversible transition between the crystalline state and the amorphous state, as a main component satisfies a relationship expressed as:  $E_o(c) \leq E_o(a) - 0.15$  where  $E_o(c)$  represents an energy gap of said material in the crystalline state, and  $E_o(a)$  represents an energy gap of said material in the amorphous state (The characteristics of the material as outlined above, make to Yasuda et al. this limitation inherent)

Regarding claim 13, Yasuda et al. discloses wherein said recording layer contains Se, and a content of Se in said recording layer is not less than 20 at% and not more than 60 at%. (See col. 12, lines 16-44)

Regarding claim 14, Yasuda et al. discloses wherein said recording layer contains Te and X, X representing at least one element selected from the group consisting of In, Al, Ga, Zn, and

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Mn, wherein a content of Te in said recording layer is between 20 at% and 60 at%, and a content of X therein is between 20 at% and 50 at% (See col. 12, lines 16-44; percents inherently to Yasuda et al)

Regarding claim 15, Yasuda et al. discloses herein said recording layer further contains at least one element elected from the group consisting of Al, Ga, In, Si, Ge, Sn, Sb, Bi, Sc, Ti, Nb, Cr, Mo, Co, Cu, Ag, Au, Pd, N, and O (See col. 12, lines 16-44)

Regarding claim 16, wherein the information layer including said recording layer has a crystallization promoting layer that is provided on at least one side of said recording layer so as to be in contact with a surface of said recording layer on the side (See col. 24, lines 46-67) Fig. 25; Figs. )

Regarding claim 17, Yasuda et al. discloses wherein the crystallization promoting layer contains N. (See col. 28, lines 57-62)

Regarding claim 18, Yasuda et al. discloses a method for recording, reproducing, or erasing information for use with the optical information recording medium according to claim 1, comprising: irradiating said material as the main component of the recording layer in the medium with a laser beam converged to a microspot by an optical system so as to cause the material to shift to an optically different state, wherein the laser beam used for recording the information is set so as to have a wavelength ranging from 300 nm to 450 nm (See col. 4, lines 14-29, col. 18, lines 46-65)



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Regarding claim 19, An optical information recording/reproducing system, comprising the optical information recording medium according to claim 1, and a laser beam source that generates a laser beam for irradiating the optical information recording medium, wherein the laser beam has a wavelength ranging from 300 nm to 450 nm. (See col. 4, lines 14-29, col. 18, lines 46-65)

Regarding claim 20, wherein said recording layer further contains at least one element selected from the group consisting of Al, Ga, In, Si, Ge, Sn, Sb, Bi, Sc, Ti, Nb, Cr, Mo, Co, Cu, Ag, Au, Pd, N, and O (See col. 12, lines 16-44)

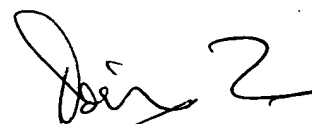
### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jorge L Ortiz-Criado whose telephone number is (703) 305-8323. The examiner can normally be reached on Mon.-Thu.(8:30 am - 6:00 pm), Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris H To can be reached on (703) 305-4827. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-6743.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

joc

  
DORIS H. TO 12/15/03

SUPERVISORY PATENT EXAMINER  
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